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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,438	06/13/2000	Mats Leijon	705/72339-2	1157

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11/23/2001

OBLON, SPIVAK, MAIER, AND NEUSTADT
1755 JEFFERSON DAVIS HGHWY 4TH FLOOR
ARLINGTON, VA 22202

EXAMINER

ENAD, ELVIN GENARGUE

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 11/23/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/509,438

Applicant(s)

Leijon et al.

Examiner

Elvin Enad

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 17, 2001
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 23-39 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 23-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

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DETAILED ACTION

Information Disclosure Statement

1. Receipt is acknowledged of the information disclosure statement papers filed on June 13, 2000 and January 17, 2001. The papers have been placed in the application file. A signed copy of the IDS will be provided when the application is allowed.

Specification

2. The disclosure is objected to because of the following informalities: Applicant's specification refers to the claims on pages 7,8,9,14,...etc. for completeness. The specification should not refer to the claims for supporting information. Appropriate correction is required.

Claim Objections

3. Claims 38 and 39 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. These claim do not further limit the apparatus as claimed.

Moreover, the preliminary amendment submitted on June 13, 2000 appears to cancel claim 5 but only stated "Cancel claim". Applicant is requested to correct the statement since the request to cancel claim can not determined and has not been entered.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1,15-18,26,29,30 and 35 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support for the limitations recited in the said claims. In claim 15, the specification does not support for the stator having a plurality of Y-connected phases. Claims 17 and 18 are dependents of claim 15, and also pertain to the Y-connected phases. Regarding claim 26, there is no support that the rotor and stator given the parameters as claimed would have the stator current limit exceeded before the thermally based rotor current limit has been exceeded. Regarding claims 29 and 30, there is no support in the specification regarding the quadrature-axis synchronous reactance (claim 29) and the excitation systems enabling both positive and negative excitation (claim 30). Regarding claim 35, there is no support for the limitation that the winding is arranged for self-regulating field control without auxiliary means for control of the field.

6. Claims 38 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 38, the limitation pertaining to the use of the mobile plant is vague and does not describe how to use this apparatus as claimed.

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Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1,3-7,10-21 and 23-39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over DeMello et al. (USP 4,368,418) in view of Elton et al. (USP 5,036,165).

DeMello et al. disclose the claimed invention except for having an electrical winding comprised of semiconducting layers. DeMello et al. disclose an high voltage rotating electrical machine comprising a stator having a core and a three phase winding, a rotor having a magnetic structure which may be either a symmetrical structure for asynchronous operation and a salient pole structure for synchronous operation. In the case of the symmetrical rotor construction, the stator and rotor constitute a rotating induction reactor which operates in the same manner as a free running, unloaded induction motor. The induction reactor exhibits characteristics similar to a saturable reactor with respect to var versus voltage absorption, but does not have the undesirable harmonics normally present in the saturable reactor. In the case of the salient pole rotor construction the stator and rotor constitute a rotating synchronous reactor which operates in the same manner as a free running unloaded reluctance motor. A series compensation arrangement is provided by connecting capacitance means in series with the stator winding to reduce the droop

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characteristic of the incremental saturated inductance of the reactor to almost zero. The transformer connecting the rotating reactor to the high voltage system could be provided with amps for steady state adjustment of the voltage level to be controlled.

Elton et al. ('165) teach having an electrical cable provided with an internal grading layer of semi-conducting pyrolyzed glass fiber layer in electrical contact with a cable conductor. In an alternate embodiment, Elton et al. disclose an electrical cable provided with an exterior layer of internal grading layer of semi-conducting pyrolyzed glass fiber layer in contact with an exterior cable insulator having a predetermined reference potential. Furthermore, note that Elton et al. teach that it is known to provide a semiconducting layer in the insulation of a conductor and to connect that layer to a fixed potential in order to provide an equipotential surface on the conductor preventing corona discharge around the conductors.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the cable winding as taught by Elton et al. to the rotating electric machine of DeMello et al. since such a modification according to Elton et al. would prohibit the development of corona discharge. Elton et al. further teach in column 2, lines 42-48 that having a semiconducting layer would bleed off any static electric discharge or electric discharge developed on the exterior surface of the insulation.

9. Claims 2 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over DeMello et al. (USP 4,368,418) in view of Elton et al. ('165) and further in view of Elton ('116).

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DeMello et al. and Elton et al. ('165) disclose the claimed invention except for a teaching that the semiconducting layers and the insulation have the same coefficients of thermal expansion.

Elton ('116) teaches that it is well known to form different overlapping insulations with the same coefficient of thermal expansion in order to prevent thermal stress to separate and crack the materials to cause failure of the insulation (see lines 38-44, col.7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed the semiconducting layers and insulation of DeMello et al. and Elton et al. ('165) such that the different layers of insulation had similar or the same coefficient of thermal expansion, as disclosed by Elton ('116), in order to prevent failure caused by thermal aging and cycling.

10. Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over DeMello et al. (USP 4,368,418) in view of Elton et al. (USP 5,036,165) and further in view of Takaoka et al. (USP 5,094,703).

DeMello et al. and Elton et al. ('165) disclose the claimed invention except for a teaching of having strands of the electrical conductor uninsulated.

Takaoka et al., as seen in figures 7,8,10 and 11 teach having a stranded conductor for an electrical cable comprising a combination of uninsulated stranded conductor and an insulated stranded conductor.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the windings of Elton et al. comprised of insulated and uninsulated

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electrical conductor strands since such a modification according to Takaoka et al. would reduce the amount of insulation needed and the number of electrical connections required in the end windings.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvin Enad whose telephone number is (703) 308-7619.

12. Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. The fax phone number for this Group is (703) 305-3431 (32).



Elvin Enad
Primary Examiner
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11.14.2001